SECTION 16470

PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Extent of panelboard and enclosure work, including cabinets and cutout boxes is indicated by drawings and schedules.

B. Types of panelboards and enclosures in this section include the following:

1. Power-distribution panelboards.

C. Refer to other Division 16 Sections for cable/wire, connectors and electrical raceway work required in conjunction with panelboards and enclosures; not work of this section.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide panelboard products of one (1) of the following:

1. General Electric Company.
2. Siemens.
3. Square D Company.
4. Cutler-Hammer.

2.2 PANELBOARDS

A. General: Except as otherwise indicated, provide panelboards, enclosures and auxiliary components, of types, sizes and ratings indicated, which comply with manufacturer's standard materials; design and construction in accordance with published product information; equip with proper number of unit panelboard devices as required for complete installation. Where types, sizes or ratings are not indicated, comply with NEC, UL and established industry standards for those applications indicated.

B. Power Distribution Panelboards: Provide circuit breaker type dead-front safety constructed power distribution panelboards as indicated, with panelboard switching and protective devices in quantities, ratings, types and with arrangement shown; with anti-turn (solderless pressure) type main lug connectors approved for copper or aluminum conductors. Equip with copper bus bars with not less than 98% conductivity and with full-sized neutral bus; provide suitable lugs on neutral bus for outgoing feeders requiring neutral connections. Provide molded-case circuit-breakers for each branch circuit, with toggle handles that indicate when tripped. Where multipole breakers are indicated, provide with common trip so overload on one-pole will trip all poles simultaneously. Provide panelboards with bare uninsulated grounding bars suitable for bolting to enclosures. Panelboard enclosures shall be not less than 8-inches deep.

1. Breakers in 480-volt panelboards shall be fully rated and shall have an interrupting capacity of not less than 35,000-amperes symmetrical.

2. Circuit Breaker Distribution Panelboards shall be:

General Electric	Spectra Series
Siemens	S4, S5
Square D	I-LINE
Cutler-Hammer	Pow-R-Line 4B

C. Panelboard Accessories: Provide panelboard accessories and devices including, but not necessarily limited to, cartridge and plug time-delay type fuses, circuit-breakers, ground-fault protection units, etc., as recommended by manufacturer for ratings and applications indicated.

PART 3 - EXECUTION

3.1 INSPECTION

A. Installer must examine areas and conditions under which panelboards and enclosures are to be installed and notify Contractor in writing of conditions detrimental to proper completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

3.2 INSTALLATION OF PANELBOARDS

A. General: Install panelboards and enclosures as indicated, in accordance with manufacturer's written instructions, applicable requirements of NEC Standards and NECA's "Standard of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.

B. Coordinate installation of panelboards and enclosures with cable and raceway installation work.

C. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standards 486A and B or manufacturer's torque requirements when more stringent.

D. Anchor enclosures firmly to walls and structural surfaces, ensuring that they are permanently and mechanically secure.

E. Provide properly wired electrical connections within enclosures.

F. Provide factory panelboard circuit directory cards upon completion of installation work. Circuit directory cards shall be arranged with even numbered circuits separated by group or card from odd numbered circuits. All circuits, including spares and spaces, shall be labeled. All identification shall be at a minimum typewritten. Hand lettering is not acceptable.

G. All wiring within panelboards shall be arranged in a neat and organized manner.

3.3 GROUNDING

A. Provide equipment grounding connections for panelboards as required by NEC and other Division 16 Sections. Tighten connections to comply with tightening torques specified in UL Standards 486A and B to assure permanent and effective grounds.

3.4 FIELD QUALITY CONTROL

A. Prior to energization of circuitry, check all accessible connections to manufacturer's tightening torque specifications.

B. Prior to energization of panelboards, check with ground resistance tester phase-to-phase and phase-to-ground insulation resistance levels to ensure requirements are fulfilled.

C. Prior to energization, check panelboards for electrical continuity of circuits and for short-circuits.

D. Subsequent to wire and cable hook-ups, energize panelboards and demonstrate functioning in accordance with requirements. Where necessary, correct malfunctioning units and then retest to demonstrate compliance.

END OF SECTION